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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/832,116

04/11/2001

Manabu Takayama

862.C2202

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03/31/2004

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EXAMINER

YAM, STEPHEN K

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/832,116

Applicant(s)

TAKAYAMA ET AL.

Examiner

Stephen Yam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This action is in response to Amendments and remarks filed on January 8, 2004. Claims 12-16 are currently pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher US Patent No. 3,598,493 in view of Grove US Patent No. 5,922,266 and Taniguchi et al. US Patent No. 6,255,644.

Regarding Claim 12, Fisher teaches (see Fig. 9) an optical scale comprising a reflecting portion (143) for reflecting light emitted from a light-emitting means (142) and for leading the reflected light to a light-receiving means (149) by using a total reflection (see Fig. 1), and a shaft holding portion (150) for holding a shaft (see Col. 10, lines 36-39) and rotating said optical scale with the shaft, wherein said reflection portion is disposed only on the same side surface (the surface of the shaft holding portion contacting the reflection portion) with said shaft holding portion, and said reflecting portion and said shaft holding portion are integrally formed in one piece (see Fig. 9), with the reflection portion formed by employing one kind of transparent resin material (polycarbonate or acrylic- see Col. 4, lines 18-19). Fisher also teaches the optical scale formed by injection molding (see Col. 6, lines 40-43). Fisher does not teach the optical scale molded by using movable and fixed platens with the reflecting portion and shaft holding portion

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formed using one of the movable platen and the fixed platen, with the shaft holding portion also formed by employing one kind of transparent resin material. Grove teaches (see Fig. 1) an injection molding method using a movable platen (22) and a fixed platen (21) (see also Col. 11, lines 6-8) to form an optical product (see Col. 7, lines 52-55). Fisher and Grove do not teach the shaft holding portion formed by employing one kind of transparent resin material. Taniguchi et al. teach (see Fig. 6a) a similar optical scale, with a disk portion (DS) for interacting with light, with a shaft holding portion (DM) for holding a shaft (20) and rotating said optical scale with the shaft (see Col. 6, lines 65-66), with the disk portion and the shaft holding portion integrally formed in one piece by using one kind of transparent resin material (polycarbonate or acrylic-see Col. 3, lines 63-66 and Col. 6, lines 51-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a movable platen and fixed platen to form the reflecting portion and the shaft holding portion, as taught by Grove, and to construct the shaft holding portion with the reflecting portion using one kind of transparent resin material, as taught by Taniguchi et al., in the optical scale of Fisher, to produce the optical scale at high output yields and reduced cost, as taught by Grove (see Col. 7, lines 52-55), and to improve the durability and stability of the optical scale while providing an efficient manufacturing process.

Regarding Claims 15 and 16, Fisher in view of Grove and Taniguchi et al. teach the optical scale in Claim 12, according to the appropriate paragraph above. Fisher does not teach a bearing or bearing inner ring portion for rotatably supporting said optical scale or a holding member for holding the bearing and the sensor, or the optical scale used in an optical encoder. It is well known in the art to use an optical scale in an optical encoder, to provide positional and rotational distance measurement. Regarding Claim 15, Taniguchi et al. teach (see Fig. 6a) the

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shaft holding portion coupled to a bearing (DD) inner ring portion for rotatably holding the optical scale (see Col. 6, lines 63-66). Regarding Claim 16, Taniguchi et al. teach (see Fig. 6a) an optical encoder using the optical scale with a bearing (DD) for rotatably supporting said optical scale and a holding member (RH, RE) for holding said bearing and the sensor. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a bearing/bearing-inner-ring-portion and a holding member as taught by Taniguchi et al. in the optical scale of Fisher in view of Grove and Taniguchi et al. and use said optical scale in an optical encoder, to reduce the number of parts for easier manufacture and provide optical system alignment, as taught by Taniguchi et al. (see Col. 4, lines 42-44) and to provide accurate measurements of rotational speed and position.

Regarding Claims 13 and 14, Fisher in view of Grove and Taniguchi et al. teach the optical scale in Claim 12, according to the appropriate paragraph above. Fisher does not teach the shaft holding portion having a closed-end concave portion or a convex portion fitted on the shaft or a gate for injecting the resin material during molding disposed in the closed-end concave portion or convex portion. It is design choice as to the curvature of the shaft holding portion, depending on the desired configuration. Grove also teaches a gate for injecting the resin material during molding (see Col. 14, lines 64-67 and Col. 15, lines 4-5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a closed-end concave or a convex portion for the shaft holding portion and to use a gate for injecting the resin material in the concave or convex portion as taught by Grove in the optical scale of Fisher in view of Groove Taniguchi et al., to structure the outline of the optical scale as desired and provide an accurate method of dispersing the resin material.

Response to Arguments

3. Applicant's arguments with respect to claims 12-16 have been considered but are moot in view of the new ground(s) of rejection.

Furthermore, Applicant argues that Fisher does not teach a reflecting surface and a shaft holding portion disposed on a same side surface and that they are on opposite side surfaces of the optical scale. Examiner asserts that the claim language does not recite the side surface belonging to the optical scale, but simply that the reflection portion and the shaft holding portion are disposed on the same side surface. Examiner submits that both the reflection portion and the shaft holding portion are disposed on a side surface on the shaft holding portion, which is contacting the reflecting portion. Therefore, the Fisher reference satisfies the limitation, as amended.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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THANH X. LUU
PATENT EXAMINER